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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,328	08/21/2003	Rodolfo R. Llinas	05986/100K521-US1	7569

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EXAMINER

NATNITHADHA, NAVIN

ART UNIT	PAPER NUMBER
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3736

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/645,328	LLINAS, RODOLFO R.	
	Examiner	Art Unit	
	Navin Natnithithadha	3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-17, 28 and 29 is/are rejected.
- 7) ☒ Claim(s) 1-9, 18-27 and 30-36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims 1, 10, and 18 have been amended. Claims 37 and 38 have been cancelled. Claims 1-36 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 31 October 2005 has been entered.

Response to Arguments

3. Applicant's arguments with respect to claims 10-17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 10, 14, 28, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Alt, US 5,143,089 A (hereinafter referred to as Alt).

Claims 10, 14, 28, and 29: Alt teaches a device (see fig. 1), comprising: a catheter (guide catheter) 17; and an electrode (a fiber electrode consisting of a plurality of electrically conductive polymer fibers 2 or fiber strands 3) 1a, wherein a signal on the electrode is monitored by way of a wire (electrical conduction lead) 5 connected to the electrode 1a, the signal being indicative of the electrical activity of the heart and being deployed from the catheter 17 in the heart. The limitations of “for sensing the activity of neural tissue,” “being deployed from the catheter in a blood vessel proximate to the neural tissue,” “being indicative of the electrical brain activity of the neural tissue,” “being operative to provide a stimulation signal to the neural tissue,” “placed in a second blood vessel proximate to the neural tissue,” “capable of being inserted into a capillary,” and “being operative to provide stimulation signal to said neural tissue” are functional limitations of the apparatus claimed. Using this language is a recitation of the intended use of the claimed invention, which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963). The size of each fiber strand 3 have a thickness as low as 8 to 20 microns, thus can be smaller than 10 microns. The small size allows the fiber 3 to be used in blood vessels/capillary proximate to neural tissue and thus is capable of placement in the

Art Unit: 3736

blood vessels/capable to indicate electrical brain activity. Therefore, Alt anticipates claims 10, 14, 28, and 29.

5. Claims 11, 12, 15, and 16 are rejected under 35 U.S.C. 102(b) as anticipated by Alt or, in the alternative, under 35 U.S.C. 103(a) as obvious over Alt in view of Kovacs et al, US 5,883,603 A (hereinafter referred to as Kovacs) and/or John, US 4,913,160 A (hereinafter referred to as John).

Claims 11, 12, 15, and 16: Alt teaches a therapeutic instrument 19 which would inherently have the typical components of a computer to receive and process the signal from the electrodes. However, in the alternative, Kovacs and John teach devices which have amplifiers, digital converters, multiplexers, and microprocessors for coupling to an electrode in order to provide signal processing.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over et al, US ,, B1A (hereinafter referred to as), as applied to claim 12 above, and further in view of over Hoek, US 6,615,067 B2 (hereinafter referred to as Hoek).

Claims 12 and 13: Alt does not teach a Schmitt trigger. However, use of a Schmitt trigger for converting analog signals to digital signals is well known in the art. For example, Hoek teaches a Schmitt trigger 307 connected to a filter 306 (see col. 6, lines

24-29). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Alt's circuitry to include a Schmitt trigger in order to have accurate digital processing of an electrode signal.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alt, as applied to claim 16 above, and further in view of Lieber et al, US 2002/0117659 A1 (hereinafter referred to as Lieber).

Claim 17: Alt teaches electrodes that are between 8-20 microns but does not explicitly teach nano-electrode(s) having a nano wire and a micro-wire. However, Lieber teaches nano-sensors comprising nano-electrodes 36 (see fig. 1a and paragraph 133) connected to nanowire 38 and electrical connections 22 (see fig. 1a and see paragraph 135). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Alt's electrodes in order to reduce the size of the electrodes and thus limiting obstruction when inserted into the body.

Allowable Subject Matter

8. Claims 1-9, 18-27 and 30-36 are allowed.

9. The following is an examiner's statement of reasons for allowance:

Claims 1-9, 26, 27, and 32-36: The prior art of record does not teach a method of sensing the activity of neural tissue comprising placing an electrode smaller than 10 micrometers in a blood vessel proximate to the neural tissue and monitoring a signal on

the electrode, wherein the signal is indicative of the electrical brain activity of the neural tissue.

Claims 18-25, 30, and 31: The prior art of record does not teach a method of stimulating neural tissue comprising placing an electrode smaller than 10 micrometers in a blood vessel proximate to the neural tissue and providing a signal on the electrode, wherein the signal stimulates the electrical brain activity of the neural tissue.

Alt only provides a method step of using an electrode having a size between 8-20 microns for stimulating or monitoring cardiac tissue.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,129,685 A teaches some of the subject matter in the Applicant's claims. The Examiner suggests reviewing these patents in responding to this Office Action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Navin Natnithithadha whose telephone number is (571) 272-4732. The examiner can normally be reached on Monday-Friday, 8:00-4:00.

Art Unit: 3736

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on (571) 272-4726. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Navin Natnithithadha
Patent Examiner
GAU 3736
23 January 2006